

[54] **ALKANEDIYL BRIDGED BENZIMIDAZOLO MONOMETHINE CYANINE DYES, PROCESSES FOR THEIR PREPARATION, AND PHOTOGRAPHIC EMULSIONS AND ELEMENTS CONTAINING SUCH DYES**

[76] Inventor: **David P. Gilbert**, Kodak Park, Rochester, N.Y. 14612

[21] Appl. No.: **570,147**

[22] Filed: **Jan. 12, 1984**

Related U.S. Application Data

[62] Division of Ser. No. 471,615, Mar. 3, 1983.

[51] Int. Cl.³ **C07D 235/04**

[52] U.S. Cl. **548/328; 260/245.6; 544/245**

[57] **ABSTRACT**

Alkanediyl bridged benzimidazolo monomethine cyanine dyes are disclosed wherein at least one ben-

zimidazolo nucleus is provided with an electron-withdrawing group. A disclosed preparation of the dyes includes producing an electron-withdrawing group substituted bis(2-nitrophenyl)-2-R¹-propanediamide, where R¹ is hydrogen or alkyl; converting the nitro groups to primary amine substituents; removing the elements of water to effect ring closure; and thereafter providing the —CR¹— linked benzimidazole nuclei so formed with an N,N¹-alkanediyl bridging group and quaternizing substituents. Dye synthesis is completed by reducing the —CR¹— linking group to the corresponding methine. The dyes are useful as sensitizers in silver halide emulsions and photographic elements.

**3 Claims, No Sheets Drawing,
33 Pages Specification**

The file of this unexamined application may be inspected and copies thereof may be purchased (849 O.G. 1221, Apr. 9, 1968).